# Statement Of Work (SOW)

The section below represents the Work Breakdown Structure (WBS) used in support of program tracking and defines the types of technical work assignments to be performed under the scope of the proposed contract for each of the Branches within the Software Engineering Division. The nomenclature is defined such that section 1.0 corresponds to the scope and charter of the Software Engineering Division (Code 580) Office, section 1.1 corresponds to the scope and charter of the Software Systems Engineering Branch (Code 581), section 1.2 corresponds to the Flight Software Systems Branch (Code 582), section 1.3 corresponds to the Ground Software Systems Branch (Code 583), and so on (see Code 580's Organization Chart below or website for complete organization details at http://sed.gsfc.nasa.gov). If a section is missing such as 1.9 for Code 589 it is because that Branch will not make use of this contract and/or the work assignments to be defined by that group are sufficiently covered in the overall statement of work. Individual work assignments shall specify the WBS under which the work is to be performed.
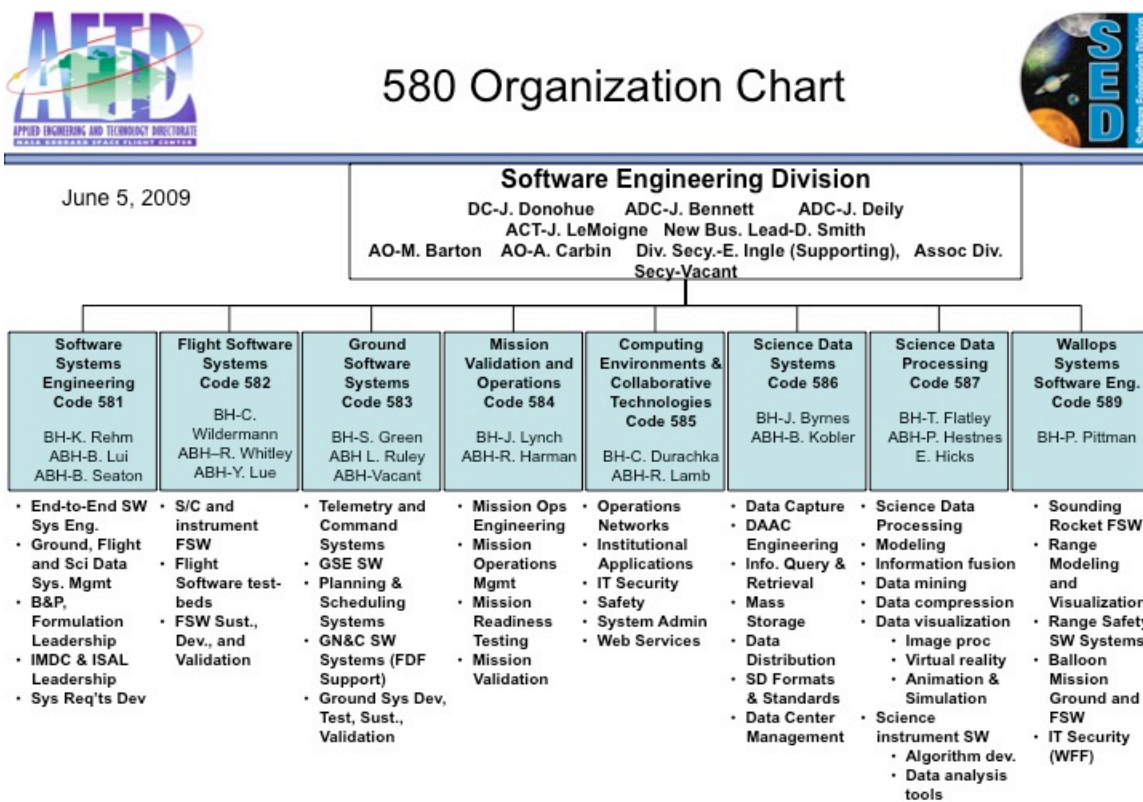


**TECHNICAL SCOPE**

The Software Engineering Division (SED) is responsible for the engineering of software and information systems throughout all phases (formulation through on-orbit operations) of NASA programs and projects. These systems include: flight, ground, and science data software for spacecraft monitoring, control, on-orbit performance management and operations; spacecraft data processing and analysis, and information management; and

science data analysis and management. The SED focuses on the development of reusable flight and ground architectures and frameworks to reduce mission cost, decrease development time, minimize customer risk, and increase the scientific value of information products. The SED provides expertise in software systems engineering, secure environments, and the software product development lifecycle to ensure the delivery of reliable software and information systems solutions.

## 1.0 OVERALL TECHNICAL WORK AND/OR PROGRAMMATIC REQUIREMENTS INDEPENDENT OF ORGANIZATION STRUCTURE.

### 1.0.1 Education and Outreach

The contractor may perform the design, implementation, verification, validation, documentation, and sustaining engineering of software and systems for education and outreach applications.  Existing education and outreach systems may include, but are not limited to, the Space Operations Learning Center (SOLC).  The contractor may support various events and activities related to education and outreach.

The Contractor shall be responsible for the preparation of educational materials via written, electronic, web, and audio-visual methods and formats that include publications, posters, instruments, apparatus, items, videos, software, hardware, CD ROM, laser discs, and other technology-based mediums.

## 1.1 SOFTWARE SYSTEMS ENGINEERING, STUDIES AND ANALYSIS

The Software Systems Engineering Branch provides end-to-end software systems engineering for the development and the support of conceptual design, requirements specification, implementation and maintenance of software systems that enable current and future NASA missions, programs and projects. Branch personnel represent expertise in all aspects of information, communication and technology software systems from flight and ground software components to science data systems and management. Branch personnel plan, coordinate, and lead the end-to-end development of such systems.

The Contractor shall perform Software Systems engineering, studies and analysis for requirements definition, operations concept definition, systems engineering, trade studies, and system definition in support of efforts in the formulation, implementation, and/or operations phases for Flight, Ground, and Science Data Systems. The contractor's duties may include end-to-end systems engineering activities that relative to requirements and architecture development, design, verification and validation approaches, risk analysis, safety assessments, integration, and test support.  The activities span the entire mission development life cycle from advanced concepts through launch and mission operations.

### 1.1.1 Requirements Generation

The Contractor shall perform software systems engineering, studies and analysis for requirements definition, operations concept definition, systems engineering, trade studies, and system definition in support of efforts in the formulation, implementation, and/or operations phases for Flight, Ground, and Science Data Systems with applicable documentation.

### 1.1.2   Documentation, Traceability, & Compliance

The contractor shall produce specific documentation and evidence in accordance with the requirements defined within the NASA software requirement NPR-7150.2, "NASA Software Engineering Requirements".

The contractor shall perform an analysis of the project's software with respect to compliance to the NASA Software Safety Standard, NASA-STD-8719.13. Identification of safety critical software components, evaluation of requirements compliance for safety critical software and verification and validation approaches for safety critical items.  Coordinate with personnel in other GSFC organizations responsible for safety oversight of flight and ground software systems.

### 1.1.3   Software Review Process
The contractor shall participate in various reviews including system and subsystem documentation reviews and provide comments/inputs of the documents that are reviewed.  Support government staff on various review panels responsible for review and submittal of comments to the chair of the panels, and if requested code analysis.

## 1.2   FLIGHT SOFTWARE (FSW) SYSTEMS

The Flight Software Systems Branch provides on-board, embedded software products that enable spacecraft hardware, science instruments and flight components to operate as an integrated on-orbit science observatory. This includes flight software and associated high fidelity simulation test systems. Branch personnel provide life-cycle flight software engineering; including early mission formulations and designs, requirements analysis, development, verification and validation, and mission-life sustaining engineering. Flight software leadership strives for effective advancements in flight hardware and software architectures, operations ground/flight interfaces, onboard autonomy, onboard science data analysis and test-beds. Flight software prototypes are implemented as proofs-of-concept for future missions.  Formalized reuse of flight software products plus the utilization of Standards and commercially available products reduce flight program complexities, risks, costs and schedules.

The Contractor shall support the planning, formulating, designing, developing, testing, and sustaining engineering of flight software systems for instruments and spacecraft associated with in-house GSFC projects and other multi-center commitments in accordance with established organizational compliance of procedures and policies such as NPR 7150.2.  The Contractor shall manage, refine, and extend the flight software infrastructure, products, plans, and processes related

to new flight software developments, flight software reuse libraries, flight software configuration management systems, flight software test, verification and validation systems, and flight software lessons learned databases. The contractor may develop simulation capabilities for all aspects of the flight software including, dynamic simulation, command and data handling simulation and science data simulation.

### 1.2.1    Mission Flight Software Development

The Contractor shall provide systems engineering and/or flight software systems design support for GSFC-managed spacecraft and instrument procurements. The Contractor shall provide flight software system engineering for the new spacecraft and/or new instrument proposals by conducting trade studies, provide support to the design of the software systems architecture, requirements and interfaces. The Contractor may also be called upon to participate in an investigative panel that oversees new GSFC projects or other multi-center projects

### 1.2.2    Flight Software Development

The contractor shall provide flight software systems engineering, and development services. These services shall include requirements analysis, the design, development, and integration of flight software targeted to specific flight hardware components. The contractor shall also provide the design, development, integration and test of target-specific flight hardware diagnostic software.

### 1.2.3    Flight Software Verification and Validation

The Contractor shall support the flight software test program including build verification and validation planning, verification testing, system validation testing, and flight software test tools development for the mission.  The contractor shall utilize flight software test-beds and simulators required for verification and validation of flight software related products.

### 1.2.4    Flight Software Maintenance and On-orbit Sustaining Engineering

The Contractor shall ensure the health and safety and successful science operations of each on-orbit spacecraft.  This support includes on-orbit multi-mission flight software sustaining engineering, pre-launch flight software training and flight software maintenance preparations.  The contractor shall be required to analyze on-orbit anomalies, recommend and provide flight software solutions, provide consultation to the Flight Operations Team (FOT), prepare flight software patches, investigate and prototype agreed upon new technology initiatives, and provide a current archive of all flight software versions, associated tools, testbed software and databases for each supported mission. The contractor shall also be assigned sustaining engineering responsibilities for several new missions during the contract period.

### 1.2.5    Flight Software High Fidelity Testbeds and Simulations

The contractor shall provide systems engineering and development services to perform requirements analysis, design, development, integration, and verification of flight software test-beds and simulations.

### 1.2.6   Flight Software Infrastructure/Support

The contractor shall support identifying, developing, and deploying improved flight software engineering processes, along with supporting artifacts (policies, processes, procedures, standards, guidelines, templates, tools, etc.). The contractor shall participate in the continued development of standards, support the flight software standards Configuration Control Board (CCB) and provide support in the implementation of these standards.

### 1.2.7   Flight Software Technology Development

The Contractor shall provide services for research and evaluation of new technologies, including the design, development, implementation, test, and analysis of flight software systems technologies.

## 1.3   GROUND SOFTWARE AND SYSTEMS

The Ground Software Systems Branch provides software products and expertise that satisfy ground system requirements for Earth and space science missions. Branch personnel perform requirements analysis, design, implementation, verification, validation, deployment and sustaining engineering for all types of ground software applications and architectures.  System functionality may include spacecraft command and control, flight dynamics, mission planning and scheduling, event monitoring and assessment, and telemetry trend analysis.  Branch personnel also investigate and apply state-of-the-art technologies and commercially available products to ensure cost effective solutions that optimally meet customer needs.

The Contractor shall perform new or ongoing development and sustaining engineering of ground software and data systems.  Contractor activities may include participation as a part of a mission's or project's ground system development team.  Ground systems development includes software design, development, test, and deployment, and associated hardware integration, test, and delivery.  The software may include commercial off-the-shelf (COTS), government off-the-shelf (GOTS), new development, or some combination of the aforementioned.  The Contractor may perform hardware systems and associated material procurement/inventory management.  The procured hardware systems shall comply with established NASA safety protocols including at least Hazardous Material Management and Electrostatic Discharge (ESD).

### 1.3.1   Ground Software Architectures

The contractor shall enhance and extend government-developed architectures, such as the Goddard Mission Services Evolution Center (GMSEC) architecture (see gmsec.gsfc.nasa.gov), to comply with evolving software engineering concepts, standards, and customer/mission requirements, to include new functions and capabilities, and to provide compatibility with external systems.

### 1.3.2    Ground Software Development

The Contractor shall perform the requirements analysis, design, implementation, verification, validation, documentation, and deployment into operations of ground hardware and software systems and applications, including applicable scripts, procedures and databases.. The functions of these systems may include, but are limited to, planning and scheduling, spacecraft command and control, event monitoring and assessment, automation, telemetry trend analysis, flight dynamics, and performance analysis for spacecraft instruments and missions.  The Contractor may also be required to ensure systems and applications are compliant with the current GMSEC architecture.

### 1.3.3    Ground Software Sustaining Engineering

The Contractor may perform sustaining engineering of existing ground software systems and applications, including associated hardware and software, for systems that are in use at the start of the contract and those that are developed over the contract life.  Existing ground software applications may include, but are not limited to, the Integrated Testing and Operations System (ITOS), the Advanced System Integration and System Test (ASIST) system, the Integrated Trending and Plotting System (ITPS), the GMSEC core components, the Constellation Coordination System (CCS), and operational Mission Planning and Scheduling (MPS) systems.

## 1.4    Flight System Verification, and Validation

The Mission Validation and Operations Branch provides expertise in operations engineering, operations planning and systems validation to ensure optimal operability of information systems.  In support of the Earth Science, and Space Science Missions, and the Exploration and Technology focus areas, the Branch develops and analyzes operational concepts, requirements, plans, schedules and documentation for planning, conducting, and evaluating spacecraft operations. Branch personnel plan, coordinate, and take responsibility for the end-to-end testing of mission systems.  Pre-launch end-to-end simulations of launch and early orbit scenarios are developed, coordinated and tested by this Branch to ensure launch readiness of ground and flight systems.  Branch personnel direct the mission Flight Operations Teams in preparation and training for launch, in-orbit checkout and daily mission operations.  Branch personnel prepare and define budgets and schedules for operations functions.  The Branch works closely with other Center personnel, other NASA Centers and contractor personnel, to assure compatibility of performance, interfaces, schedules and budgets.

The Contractor shall support flight mission operations including build verification testing, system validation testing, and flight software and flight operations test tools development for the mission.

### 1.4.1    Validation and Verification Functional Areas:

The contractor shall utilize flight software test-beds and simulators required for verification and validation of flight and ground software related products. The contractor shall also support mission readiness testing to include communication

and functional test of the mission ground system, ground station interfaces, and end-to-end testing of the communication path from the spacecraft to the ground and/or science operations systems.

The contractor shall generate and/or review Verification Plans; support the design, drawing, and specification reviews; prepare documentation and/or review of system qualification requirements; and prepare and/or review hardware and software integration plans and procedures, and witnessing execution. Prepare and/or review detailed functional and environmental test plans and procedures, and witness test execution. Ensure that the technical aspects of shipping requirements and equipment are met.

The contractor shall provide comments and/or recommendations to ensure: 1) that designs meet specification and interface requirements, 2) that appropriate parts standards are compatible with specified mission requirements and risk levels, 3) that detailed specifications are compatible with mission requirements, including margin and error budgets, 4) and that proper consideration is given to cost, reliability, safety, non-flight fabrication requirements, contamination control, magnetic materials/interference, launch requirements, and space environmental requirements.

The contractor shall prepare and/or review plans for launch site checkout, integration and testing of flight systems, including adequacy of the launch site facility. Analyze data from spacecraft telemetry data sources to ensure total system compatibility. Analyze flight performance from flight data.

## 1.5  SUPPORTING SERVICES

The Computing Environments and Collaborative Technologies Branch provides a diverse variety of services and tools in support of activities within the (SED). Branch personnel integrate, maintain and manage the secure Information Technology (IT) environment supporting research, engineering, and administrative information requirements.  The branch further develops web based collaborative and knowledge management systems; while deploying prototypes to foster the adoption of these systems in partnership with customer groups. The branch serves as Goddard's focal point for all Software Process Improvement (SPI) activities, including; developing and maintaining the process asset and tool library, deploying process assets and tools through mentoring and software training programs, and implementing the division measurement program.

The contractor shall perform engineering services to provide a diverse variety of services and tools to maintain and manage the secure Information Technology (IT) environment, which supports research, engineering, and administrative information and computing requirements managed by the Division.  The contractor may develop and maintain testbed and operational labs in support of flight, ground, and science software based activities.

The contractor shall also be required to support the design, development, test and deployment of web-based collaborative and knowledge management systems, Capability Maturity Model Integration (CMMI) compliance and improvement support, network design, and performance studies.  The contractor may also support the prototyping, design, and implementation of collaborative computing environments.

The contractor shall also provide configuration management support for all software systems and system administration activities managed by the Division. The contractor may support configuration management of:
- Flight software
- Ground software
- Simulation software
- Testbed hardware and software
- Ground and flight databases
- Collaboration System software

The contractor shall provide systems administration including backups, new product installation, platform maintenance, etc. for the following:
- Flight software development and maintenance facilities
- Ground software development and maintenance facilities
- Simulation software development and maintenance facilities
- Testbed hardware and software development and maintenance facilities

### 1.5.1   Software Process Improvement (SPI) Support

The contractor shall provide support in developing and maintaining the GSFC and NASA CMMI process assets, tools, and training, as well as the database driven website containing the library of assets. The contractor may provide support in deploying process assets and tools through mentoring, audit programs, and software training programs, implementing the organizational measurement program, and provide support to the organization in preparing for CMMI appraisals. The contractor may also provide other support to the Software Process Improvement Team, including consultation, logistics support, planning support, coordination, progress tracking, and configuration management support. The contractor may provide support to NASA Software Working Group Teams in the areas of software research, software process improvement, training, and measurement.

### 1.5.2   Network Engineering Support

The contractor shall research, design, develop, test, evaluate, integrate, validate, and demonstrate information assurance solutions for end-to-end mission/project networks. Areas of investigation include network security, network scheduling, cryptographic modernization and key management, and cross-domain solutions to meet the demands of network centricity and to resolve issues regarding current technology and capability shortfalls.

The contractor may perform network tests for latency and packet loss spanning across the network layers associated with the IP protocol in a mission and development lab environment.

### 1.5.3   Systems Administration and IT Security Support

The Contractor shall provide systems administration and IT security supporting services. The systems administration services include system or software installation, setup, configuration or de-installation; Internet Protocol (IP) address management; system/environment architecture design and implementation; account management; backup; and data removal/cleaning for computer systems in development facilities; for the following:

- Flight software development and maintenance facilities
- Ground software development and maintenance facilities
- Simulation software development and maintenance facilities
- Testbed hardware and software development and maintenance facilities
- Collaborative systems

Work activities may include the design, preparation, review, and updating of IT security procedures and processes to ensure consistency with NASA and GSFC guidelines, reporting of security compromises, identification and repair of security incidents and anomalies, and centralizing/consolidating IT security services for the Division, Directorate and Center.

### 1.5.4   Software Engineering Support for Application Development

The Contractor shall provide engineering studies and analysis for requirements definition, operations concept definition, systems engineering, trade studies, and system definition in support of efforts focused on developing web services for mission systems traditionally not web based or combining several existing web based systems.  The Contractor may provide support to develop prototypes and demonstrate solutions to meet capability needs, ensuring the necessary IT security and usability constraints and requirements are met.  The Contractor may provide Preparedness & Response application prototypes and pilot integrations with stakeholders requirements and interactions with Science & Technology Directorates in response to agreed inter-agency agreements.

### 1.5.5   Infrastructure Support

The contractor shall provide institutional type support to provide support in the areas of property management, facilities upgrade/maintenance/management, and conference and meeting support.

### 1.5.6   Inter-Agency Collaborative Systems Management

The Contractor shall provide Systems Engineering and Management for Collaborative Systems applications and interactions (i.e. cooperative planning, IT Systems Support, and Collaborative Systems Research and Development) for use by NASA and other federal agencies.  The Contractor may provide support to develop plans, reports, systems, and facilitate to the support of GSFC's role

regarding inter-agency requirements.  The Contractor may provide reports and concept documents in the areas of Collaborative Systems and Open Source Systems in alignment of inter-agency agreements and requirements.

### 1.5.7    NASA Software Working Group (SWG) and NASA Office of the Chief Engineer Software Support

The contractor shall provide support in the planning, coordination, scheduling and implementation of activities of the NASA Software Working Group and the Office of Chief Engineer (OCE) Software Initiative Lead. The contractor may provide logistics support, and support for software process improvement activities, short turn-around research tasks, scheduling and tracking of tasks, and technical review. Contractor may implement and maintain group communication tools, and the NASA Process Asset Library and may coordinate with other NASA Centers to communicate and coordinate Agency and Center process improvements.

## 1.6    SCIENCE SYSTEM DEVELOPMENT

The Science Data Systems Branch is responsible for the specification, design, development, installation, validation, modification, and operation of data systems for the acquisition, production, and distribution of data products that support NASA's science and Exploration missions.  These systems may range in complexity from those that handle single, small instrument data streams with a limited user community to multi-mission data systems serving diverse multidisciplinary user communities. The Branch supports all aspects of the science data management life-cycle which includes:  processing systems, archives, distribution systems, networking, query systems, and user interfaces.  Branch personnel have expertise in metadata definition, data formats, mass storage technologies, cost modeling, and contract management. In addition, the Branch supports new and evolving data system concepts, such as virtual data systems, grid computing, distributed archives, data workflows, visual data queries, and data modeling.

The contractor shall provide science data system engineering, software system engineering and software engineering services to design, develop and deploy science systems and applications for science operations, data processing, data management, and data analysis and visualization. Data system engineering may include problem definition, solution analysis, process planning and control, system documentation development and maintenance, system integration, and product evaluation. Software system engineering may include requirements definition and analysis, software design, process planning and control, software documentation development and maintenance, verification, validation and test, and software integration.  Software engineering may include detailed software design, implementation, and unit testing.  The science system software may include COTS, GOTS, new development, legacy code, or some combination of the aforementioned. Science systems development may include hardware definition, integration, test and deployment. The contractor may provide science operations support for ongoing missions.

### 1.6.1 Science Data Systems Engineering

The contractor shall perform requirements analysis, software and data systems design, process planning, process control, and verification, validation, and testing of science systems. This work may also include evaluation of generated data products and documentation, definition of functional, performance and external requirements, definition of the system architecture, developing detailed system designs, determining tasks and their priorities, and preparing for and participating in various system reviews.

The contractor may maintain existing and newly developed science data systems. This work may include the definition, acquisition, implementation and maintenance of the associated hardware and software.

### 1.6.2 Science Operations Systems

The contractor shall plan, design, develop, implement and test science data operations systems. This work may include science instrument command definition, processing, and upload; and user interfaces. This work may include the definition, acquisition, implementation and maintenance of the associated hardware and software.

### 1.6.3 Science Data Processing Systems

The contractor shall plan, design, develop, implement and test science data processing systems for level-0 and higher level products. This work may also include science data and metadata definition, algorithm development, user interfaces, distributed processing systems and environments. This work may include the definition, acquisition, implementation and maintenance of the associated hardware and software.

### 1.6.4 Science Data Management Systems

The contractor shall plan, design, develop, implement and test science data management systems for science data distribution and archive. This work may also include science data and metadata definition, data query systems, users interfaces, distributed data systems and environments. This work may include the definition, acquisition, implementation and maintenance of the associated hardware and software.

### 1.6.5 Science Data Analysis and Visualization Applications

The contractor shall design, develop, implement and test science analysis and visualization systems. This work may also include science data query systems, user interfaces, algorithm development, distributed data systems and environments. This work may include the definition, acquisition, implementation and maintenance of the associated hardware and software.

## 1.7 ADVANCED CONCEPTS

The Science Data Processing Branch is responsible for the design, development, implementation and integration of science data processing applications and science data processing technology for flight, in-situ and ground based systems. The Branch supports all phases of instrument, spacecraft and mission development, from concept through post-mission analysis, for Earth Science, Space Science and Exploration Systems customers. Areas of expertise include embedded science data processing, modeling/simulation, data visualization, image/sensor data processing, sensor webs, application architectures/frameworks, automation, intelligent agents, algorithm development, data compression, distributed systems, data mining, human-computer interaction, information fusion and the development of data analysis tools.

Systems engineering and consultative services are also provided to support the development of end-to-end system concepts, requirements and functional specifications for flight project, study and proposal efforts. The Branch works in collaboration with other Divisions within the Applied Engineering and Technology Directorate (500), Science and Exploration Directorate (600), Flight Projects Directorate (400), government, university and industry organizations to develop effective science data processing solutions that enable scientific investigation and meet customer needs.

### 1.7.1 Science Data Processing Applications and Data Processing

The Contractor shall formulate and develop advanced technology concepts and the advancement of their associated technology readiness level (TRL). The Contractor may be required to plan and accomplish the infusion of the resulting technology into mission or project systems for data processing or the implementation of data processing prototypes. The contractor may design and develop advanced concepts for all aspects of mission including hardware, complex electronics, reconfigurable computing, and software solutions to meet highly complex mission data processing objectives.

The contractor may deploy systems for missions. This work may include closely coordinating with the flight projects or other government organizations to identify requirements, perform trade studies, configure/enhance existing systems, delivery, integration, testing, documentation and training.

The contractor may perform work assignments in areas significantly overlapping with requirements outlined in sections 1.1.1, 1.2.7, 1.6, 1.6.1, 1.6.3, and 1.6.5.

## 1.8 No organizational unit is defined with this number within Code 580.

## 1.9 SYSTEMS SOFTWARE ENGINEERING support at WWF

The Wallops Systems Software Engineering Branch is the Software Engineering Division's engineering service provider at Wallops Flight Facility (WFF). We work with

flight projects, principal investigators, Divisions within the Applied Engineering & Technology Directorate (AETD), and other organizations to develop flight and ground data systems for sub-orbital and special orbital Earth and space science missions. We develop integrated systems applying state-of-the-art technologies, commercial-off-the-shelf products, and custom developed products to provide cost-effective solutions to meet the customers' needs. We provide system engineering, system planning, conceptualization, requirements analysis, design, implementation, test, verification, and sustaining engineering. Our products support the planning, execution, and analysis of missions and include mission visualizations and simulations, carrier, payload, and ground system monitoring and control, and data display and analysis.

The contractor shall provide software system engineering services related to the design, development, and deployment of ground and flight software for Wallops Flight Facility missions. Software system engineering may include requirements definition and analysis, software design, process planning and control, software documentation development and maintenance, verification, validation and test, software integration, system deployment, operational support, and post-mission data analysis.  The software systems may include COTS, GOTS, new development, legacy code, or some combination of the aforementioned. The contractor may perform work assignments in areas significantly overlapping with requirements outlined in sections 1.1, 1.2, 1.3, and 1.5.

- **WORK DISTRIBUTION ACROSS THE BRANCHES WITHIN SED**

    Based on in-house labor estimates, the table below illustrates the distribution of work for each of the Sections described in the Technical Scope above.  These levels/numbers are estimates only for work distribution at the start of the contract. Distributions may change during the period of contract performance. In addition, the contract will be managed by overall labor hours, not at the WBS level.

|  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| **% of Labor Hours for Code 581 (WBS 1.1)** | 2.94% | 7.32% | 7.65% | 8.39% | 5.79% |
| **% of Labor Hours for Code 582 (WBS 1.2)** | 24.85% | 22.97% | 22.03% | 22.80% | 23.43% |
| **% of Labor Hours for Code 583 (WBS 1.3)** | 9.04% | 8.27% | 8.17% | 7.35% | 7.47% |
| **% of Labor Hours for Code 584 (WBS 1.4)** | 21.92% | 19.58% | 19.49% | 18.99% | 19.51% |
| **% of Labor Hours for Code 585 (WBS 1.5)** | 14.93% | 17.36% | 17.42% | 17.27% | 17.74% |
| **% of Labor Hours for Code 586 (WBS 1.6)** | 25.21% | 23.31% | 22.84% | 22.64% | 23.26% |
| **% of Labor Hours for Code 587 (WBS 1.7)** | 1.10% | 1.19% | 2.42% | 2.56% | 2.79% |
| **% of Labor Hours for Code 589 (WBS 1.9)** | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
|  | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |